

**Preserving Wildlife
in San Luis Obispo
City by way of San
Luis Obispo Creek**

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Introduction

Open space and the maintenance of biodiversity has become an important consideration in urban areas today. Extreme consideration takes place when determining how and where land is preserved. This is especially true in San Luis Obispo City with its General Plan specifications, and private organizations that strive to set important land aside. Planning open space utilizes the fundamentals in animal movement to allow for corridors between one large habitat to another. San Luis Obispo City utilizes the San Luis Obispo Creek as one of these corridors to serve the greater tracts of preserved habitat surrounding the city. Unfortunately, the current health of the Creek is helping deter animal movement. Its current condition signals to animals and plants that it cannot support their requirements for clean water or healthy food and so they are forced to find alternatives to this corridor. These alternative routes are unsafe as they often run through urban areas, across highways. Or animals are prevented from moving all together by fences, homes, and other man-made deterrents. The state of California has currently placed the Creek on the 303 (d.) list for unsafe levels of contaminates such as chloride and sodium. The effectiveness of San Luis Obispo wildlife easements and city open space utilized to preserve species of concern is correlated to the health and maintenance of the San Luis Obispo Creek. I propose that the health of the Creek be addressed before more open space is added to the green belt surrounding the city. This bottom-up approach to preservation will ensure all steps of habitat will function as they should.

Background

As urban areas sprawl across the landscape, they encroach upon habitat; animals require specific habitat characteristics to fit their individual needs. Because large, open spaces continually dwindle and become fragmented, planning open space requires understanding the fundamentals of habitats and animal movement. A fragmented landscape puts animals at a severe disadvantage, while a block of habitat would provide enough area and diversity for existing animals to thrive (Greve). Larger habitats minimize borders and provide a bigger interior for animals to call home (See Photo 1).

Corridors

Existing blocks of habitat depend on corridors, or narrow strips of habitat, to help facilitate animal movement from one area to another. The length and breadth of corridors depend on the specific needs of the animals (See Photo 2). If a corridor does not exist, is too small, or is unhealthy, animals will not use it. According to ecologists at the NRCS Watershed Science Institute in Raleigh, North Carolina, there are several important factors in creating and maintaining corridors: continuity, width, maintained natural linkages, and structural diversity. It is these factors that must be taken into account when setting aside land or preserving existing linkages. Without adhering to one of the basic needs of a corridor, the overall health of the plant and animal population may be negatively affected.

San Luis Obispo Creek

San Luis Obispo Creek functions as a corridor for the green belt around San Luis Obispo proper (See Photo 3). It provides a strip of habitat for animals to cross from one side of

the city to the other without having to face the urban landscape, which is potentially dangerous and threatening; the health of this creek directly impacts the larger tracts of land it connects. According to the University of Illinois Extension, “Fish and wildlife populations, native plant distribution... all depend on movement through environmental corridors. For example, wildlife populations isolated in one wooded location can overpopulate, die out, or cause problems for neighbors if there are not adequate corridors to allow the population to move about freely.” SLO Creek provides animals a highway through the City that would not exist if it were not for this natural feature. Its preservation is the key to maintaining wildlife throughout the City and its green belt.

The State of San Luis Obispo Creek

Despite San Luis Obispo’s General Plan provisions for habitats, San Luis Obispo Creek has been placed on California’s 303 (d.) list. To be placed on this list, a body or bodies of water must be “impaired.” This classification of impairment is based on the water quality levels required by each individual state. Regardless of the requirements, each state must produce a list each year stating which bodies of water do not meet their standards. The San Luis Obispo Creek, both above and below Chorro Street, has been placed on the California 303 (d.) list since 2002 because of levels that do not meet state standards. Because of its high levels of contaminants like: chloride, chlorpyrifos, nitrates, nutrients, sodium, and fecal coliform, the San Luis Obispo Creek fails to meet these standards.

Chlorpyrifos

With the introduction of chlorpyrifos to the SLO Creek, major ecological damage can happen. Chlorpyrifos, a type of insecticide, has been known to kill and cause birth defects in all ranges of animals. It also promotes delayed seedling growth and deformed fruit in trees that have been exposed to it. In the article “Chlorpyrifos, Part 1-3” by Caroline Cox, the negative effects of this insecticide on a wildlife corridor are outlined. “If an entire ecosystem is exposed to chlorpyrifos, significant changes in the abundance of a number of species, even those not directly killed by chlorpyrifos, can result. This has been well-documented in aquatic ecosystems (p 13).”

Chloride and Sodium

Although both chloride and sodium are necessary for all life functions, increased exposure to them disrupts bodily functions; often the two are found together and affect wildlife in a similar way. As stated in a report by the Canadian Government, “More specifically, exposure to elevated levels of chloride in water can disrupt osmoregulation in aquatic organisms leading to impaired survival, growth, and/or reproduction.” The severity of these effects depends on temperature, other contaminants, and dissolved oxygen levels (Siegel). Current oxygen levels are compromised from the high levels of nitrates in the Creek, which in turn increases concentrations of chloride causing a greater impact on the flora and fauna of the area.

Nitrates and Nutrients

In addition to chloride and sodium, the combination of nitrates and nutrients can cause eutrophication, where an algae uses up the dissolved oxygen causing non-plant life to suffer oxygen loss and die out; such negative effects can be seen at Lake Victoria where the Lake's fresh water is being compromised by eutrophication (United Nations Environment Program). One of the specific producers of nitrates is the SLO Waste Water Treatment Plant that dumps cleaned waste water into the Creek without removing all nitrates (City of San Luis Obispo). Their combined nitrates with AG runoff and urban activities push the Creek's levels over acceptable standards.

Fecal Coliform

Waste that often results from livestock grazing in or near riparian areas contains bacterium known as fecal coliform. While the bacteria do not have major side effects, to either animals or people, it can be a sign that other issues exist. Vermont's Department of Health states, "(Coliform) in... water will not necessarily make you ill. However, since these organisms are present, other disease-causing organisms may also be present." It is because of these other organisms that the animals that use the Creek as a main water source can get sick or die, thus adversely affecting the whole wildlife system and deterring other animals from frequenting the corridor.

Why San Luis Obispo Creek should be a Priority

Many may think that the Creek will take care of itself and animals and plants will adapt to its new conditions. But waiting to see what wildlife will do is inconstant with the General Plan adopted by SLO City. This General Plan identifies many important elements that must be considered as the City continues to develop. In this document Open Space is identified as one of these important essentials, along with the preservation of wildlife. Open Space and wildlife, as recognized, are directly affected by the health of the Creek.

Consistency with the General Plan

San Luis Obispo's General Plan identifies habitat preservation as an important piece of the city's growth. As it says in the City's General Plan, "When surveyed, City residents have repeatedly placed open space and environmental conservation high on the list of community goals, values, and priorities (Section 1.2, pg 6-9 of SLOs 2006 General Plan)." Maintaining the Creek's health is necessary to preserve the health of surrounding land and maintain the open space as identified in the General Plan.

Open Space

As a part of the General Plan, the City's goal is to save land with sensitive plant and animal species first, in this way guaranteeing the wildlife habitat despite surrounding development. As stated in the Open Space Purpose, "Its overarching goal is to protect resources (such as air and water, wildlife habitat, scenic and agricultural lands, watershed and historic features) with a secondary goal of

accommodating passive recreation where it will not harm the environment or interfere with agricultural operations.” To easily identify land of interest and preservation, The Land Conservancy, a non-governmental agency, created a map of prioritized open space surrounding the city. (See Photo 4) The success of the prioritized land and the Open Space element depends on land health which in turn depends on stream and corridor health.

Preservation

The General Plan also identifies species of concern that need to be preserved when considering open space and urban development. The Prickly Sculpin Fish, Herons, Egrets, and the Mariposa Lily are just some of the identified species that depend on SLO Creek and its health. After seeing all of the high levels of contaminants, it is easy to understand that prolonged exposure to them may cause these species of concern to die out or leave. The end result of this consequence is contrary to goals identified in the General Plan, resulting in governmental inconsistencies. As Goal 7.2 states, “The City will maintain and enhance conditions necessary to enable a species to become self-sustaining. Within the San Luis Obispo planning area, the City will seek to achieve self-sustaining populations of the plants, fish and wildlife that made up the natural communities in the area when urbanization began.” Statement such as these must be taken into consideration when looking at the current state of the Creek and its negative impacts on surrounding habitat and wildlife species.

Action Plan, from the Bottom-Up

All components of the City should participate in the ground-up preservation of habitat. The key players in this preservation plight are the city agencies, non-government organizations, and citizens. "Appropriate best management practices should be followed to maintain and improve the corridor's ecosystem so it can function as desired. Due to the nature of these corridors, effective management may require the cooperation of several... agencies." (University of Illinois Extension)

City

The city should spearhead the initiative to clean up SLO Creek. Their first step should be public education on the existing issues and the ramifications of them, if they continue. Informed citizens could then understand how lawn runoff, littering, or even swimming in the Creek could help magnify the existing issues.

Existing funds used to purchase habitat that depends on SLO Creek should be applied to the Creek first. If the corridor is unhealthy, it counteracts the productivity of the newly acquired land. In this way the City will ensure that its existing wildlife habitats can support target species far into the future.

In regards to regulation, stricter standards should be placed on industry near the Creek. The local waste water treatment plant could be required to reduce the existing parts per million of nitrates in their recycled water. Removing one player in the nitrate producer, no matter how small or large can help the overall levels of the creek. Regulating

agricultural activities near the Creek would also reduce all contaminants (See Picture 5 for agricultural land around SLO City). A carrot-and-stick approach could be used where incentives are given to companies, businesses, ect. that use fewer pesticides, or provide green belt buffers to absorb runoff. Monetary consequences could also be applied to offenders, and the funds could be used on additional programs for the Creek. The City is under scrutiny by the State of California, and lack of action on SLO City's part would prove inconsistent with the General Plan. Action is needed by the largest stakeholder in this problem.

NGOs

Agencies, such as the Private Lands Wildlife Management Program and Conservation Easements Program can help provide funds and action plans regarding this problem. Their existing goals may be to buy land as open space, but creek health may counteract their efforts because the new tracts of land do not have an outlet, or corridor, that animals are willing to use. Participation in this issue would provide additional players and support to the City and ensure future land holdings that would support wildlife and AG land as intended. There are many more of these agencies that apply to the San Luis Obispo Creek, which can be found at www.defenders.org.

Citizens

Once citizens are informed, simple tasks such as reducing the amount of lawn fertilizer or fixing faulty sewer lines can make a difference to the Creek. People can also come together to create additional organizations aimed at addressing this specific problem. As

seen in the General Plan, people are concerned with preserving the natural features of their home town. SLO Creek health can have just as big of an impact on them as it does on the wildlife that depends on it.

Conclusion

The San Luis Obispo Creek is an important feature in San Luis Obispo City. Its preservation and health is a fundamental component to larger preservation projects. The General Plan gives a very specific set of goals and actions that should be taken by the City concerning Open Space preservation and the issues listed above. The existing conditions of the Creek are contrary to State and local standards and need to be addressed. If all the entities affected by its health were to take action, then a bottom-up approach to preservation is possible. These actions would lead to a healthier corridor and open space for plants, animals, and humans.

Visuals

Photo 1:

Fragmented Landscape
vs. Block of Habitat

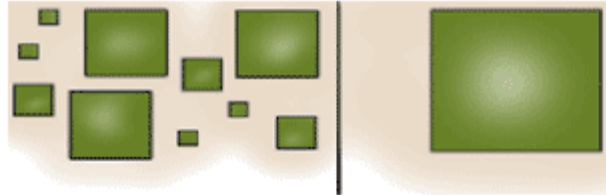


Photo 2:

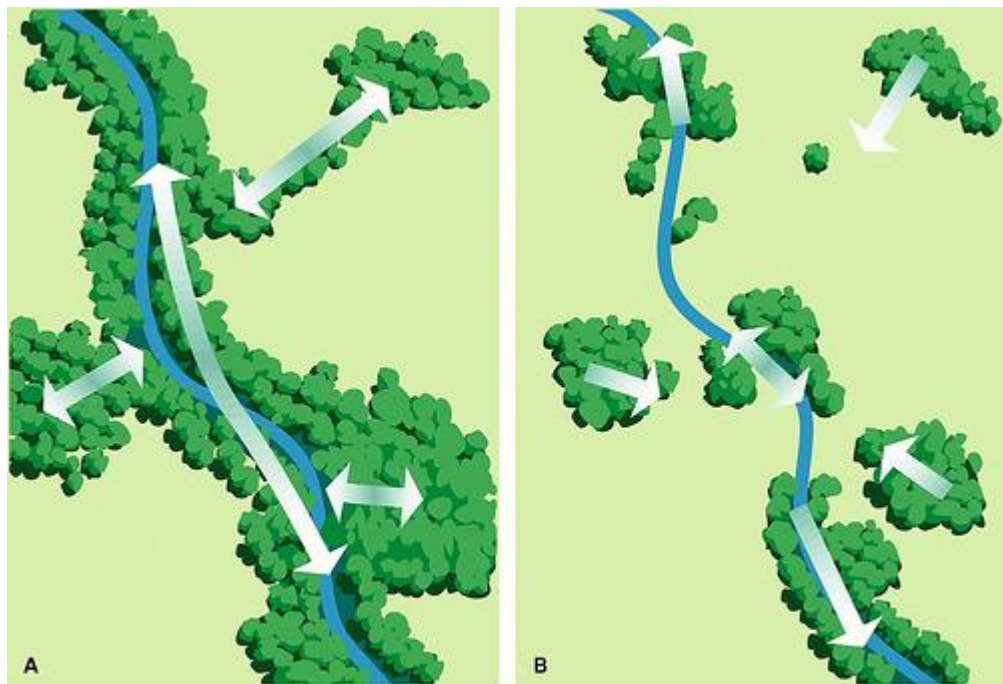


Figure A has a high level of connectivity or movability for animals. While Figure B shows a low connectivity landscape, or a fragmented landscape.

Photo 3:

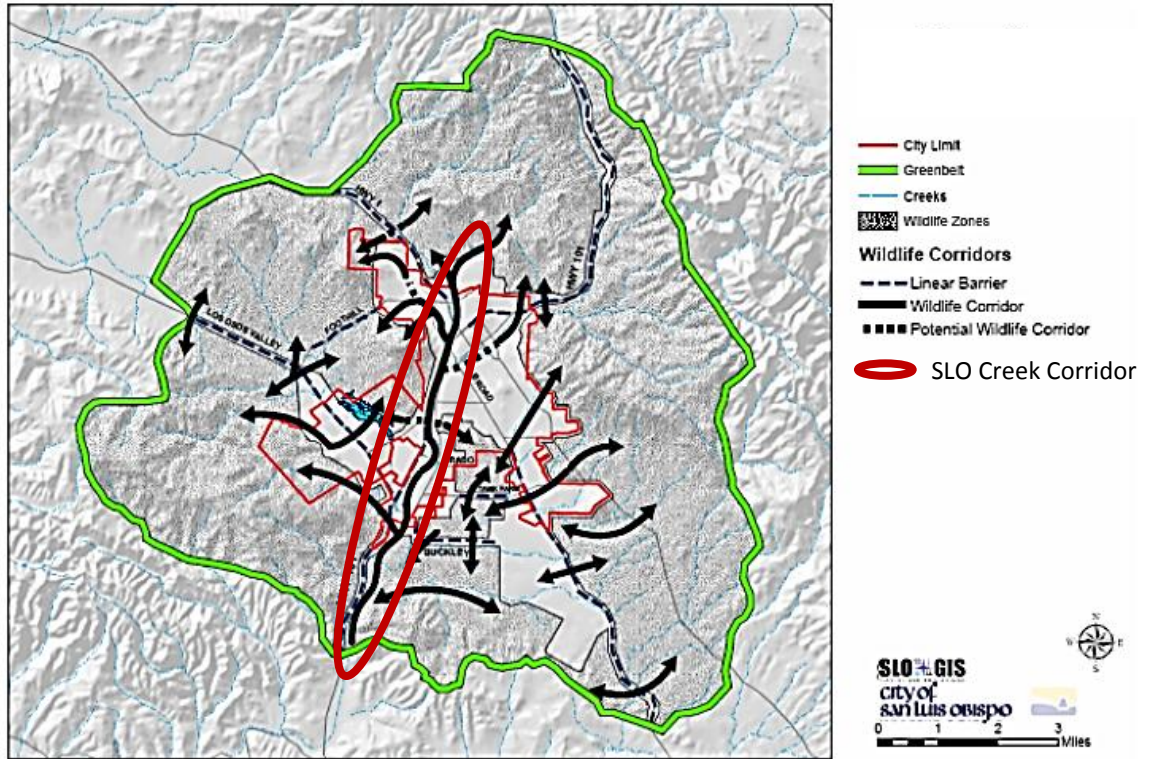


Photo 4:

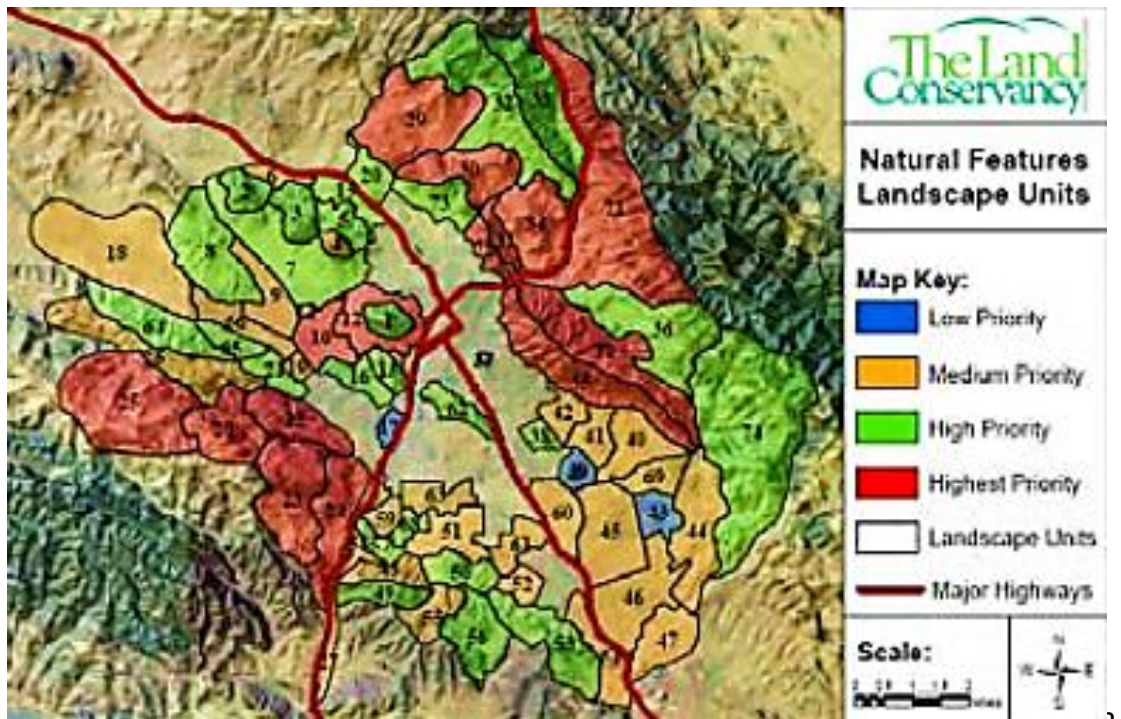
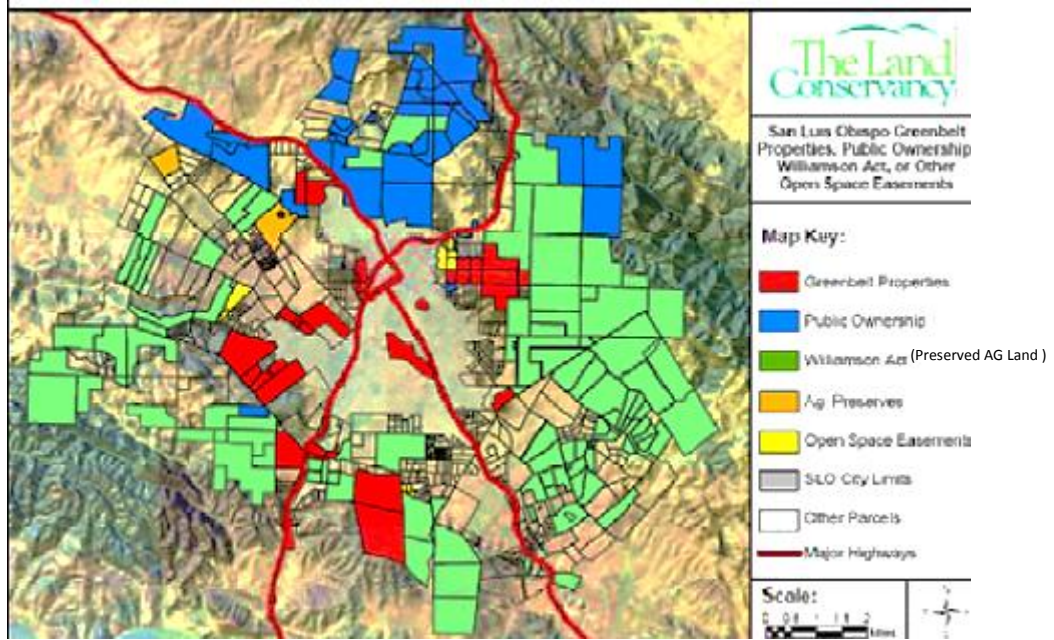


Photo 5:



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